

Scientific Note

HOST SPECIFICITY OF TWO SHADE TREE APHID PARASITOIDS

Trioxys (Betuloxys) hortorum (Starý) (Hymenoptera: Braconidae: Aphidiinae) is a relatively host-specific primary parasitoid. It is recorded (Starý, P. 1978. Acta Entomol. Bohemoslav., 75:164-177) from *Myzocallis carpini* Koch and *Tinocallis platani* Kaltenbach, both drepanosiphid aphids in the tribe Phyllaphidina (Heie, O. 1982. The Aphidoidea [Hemiptera] of Fennoscandia and Denmark. II. The family Drepanosiphidae. Fauna Entomol. Scand., 11. Scandinavian Science Press, Ltd., Klampenborg, Denmark). In 1982, *T. hortorum* parasitizing *Tuberculatus annulatus* (Hartig) were collected on *Quercus robur* L. in Rheine, Germany. We successfully reared F1 and F2 generations in the laboratory from this aphid as well as from *Eucallipterus tiliae* L. on *Tilia cordata* Miller (both aphids are in the tribe Phyllaphidina). These new records suggest that this species may be collected from one of several hosts in Europe for release in northern California for potential control of these aphids.

Another aphidiidine, *Praon flavinode* (Haliday) was also collected from *T. annulatus* in Germany. It is a polyphagous parasitoid which Starý recorded from 10 aphid species, all in the tribe Phyllaphidina. We conducted choice experiments by *P. flavinode* for three European aphid species that develop large populations on populations of *Quercus*, *Betula* and *Tilia* shade trees in northern California.

The tested individuals were 11 F1 offspring of individuals collected from *T. annulatus* in Germany. For each replicate, a mated female parasitoid was placed in a cotton-stoppered glass vial (9 × 2.5 cm) with six third- and fourth instar aphids: two each of *T. annulatus* on *Q. robur*, *Eucallipterus tiliae* on *Tilia cordata* and *Euceraphis betulae* (Koch) on *Betula pendula* Roth. We observed each parasitoid for 10 min, recording the number of times the parasitoid touched the aphid in any manner, as well as the number of ovipositor insertions (dissections were not conducted to test for actual egg placement). Our results (Table 1) show that *P. flavinode* had significantly more encounters than expected ($P = 0.05$, χ^2 analysis) with *E. betulae* nymphs than either *E. tiliae* or *T. annulatus* nymphs. Ovipositor insertions were also higher for *E. betulae*, but not significantly different from the other two hosts. These findings imply that *P. flavinode* exhibits a preference for certain host aphid species. This preference is contrary to the one an-

Table 1. Parasite-prey interaction.

Host species	Total encounters	Expected encounters	Ovipositor insertions (%)
<i>T. annulatus</i>	73	99	57 (78.1)
<i>E. tiliae</i>	92	99	79 (85.9)
<i>E. betulae</i>	131	99	126 (96.2)

ticipated by the Hopkins Host Selection Principle, which states that a polyphagous species will select the host it was reared on.

Acknowledgment.—We thank Robert Zuparko, Junji Hamai, Gunter, Renate and Claudia Braukmann, and Leonard and Janet Dahlsten for their assistance. Funds were provided in part by the Elvenia J. Slosson Endowment Fund for Ornamental Horticulture.

Donald L. Dahlsten, Ann E. Hajek & Marilyn Wilson, *Division of Biological Control, University of California, Berkeley, California 94720.*

Received 25 April 1990; accepted 8 August 1990.

PAN-PACIFIC ENTOMOLOGIST
66(4): 323–324, (1990)

Scientific Note

FIRST CALIFORNIA RECORD FOR *ANTHOCORIS NEMORALIS* (FABR.) (HEMIPTERA: ANTHOCORIDAE), A PREDATOR IMPORTANT IN THE BIOLOGICAL CONTROL OF PSYLLIDS (HOMOPTERA: PSYLLIDAE)

Anthocoris nemoralis (Fabr.) is a predator of psyllids, aphids, thrips, eggs and larvae of moths, and some mites in Europe. It was first recorded in the Nearctic in 1958 (Anderson, N. H. & L. A. Kelton. 1963. *Can. Entomol.*, 95: 439–442) in eastern Canada, where its introduction was apparently accidental. It was subsequently introduced successfully into British Columbia from Europe in 1963 to control the pear psylla (McMullen, R. D. & C. Jong. 1967. *J. Entomol. Soc. Brit. Columbia*, 64: 35–40), and had not been found in the Pacific Northwest prior to then (Anderson, N. H. 1962. *Can. Entomol.*, 94: 1325–1334). There are no reports of its introduction in California. However, *A. nemoralis* is now established in three counties in northern California where it feeds on three exotic psyllids on introduced landscape plants.

We have observed and studied *A. nemoralis* nymphs and adults in California at sites along Carlson Boulevard in Richmond, Contra Costa County, and in the Presidio of San Francisco, San Francisco County, feeding on all life stages of *Acizzia uncatoides* (Ferris & Klyver), a psyllid on *Acacia longifolia* Willdenow. All life stages of the anthocorid occur on this acacia, especially in the spring and early summer after psyllid populations have increased. *Anthocoris nemoralis*, and an introduced lady beetle, *Diomus pumilio* Weise (Coleoptera: Coccinellidae), appear to be important in the biological control of this psyllid in Richmond where we have been studying these insects since April, 1989. Psyllid and anthocorid populations are relatively lower at our San Francisco study area; Madubunyi (Madubunyi, L. C. 1967. M.S. thesis, University of California, Berkeley) did not find *A. nemoralis* during his study of *A. uncatoides*. Madubunyi (1967) reported